

FIG. 1

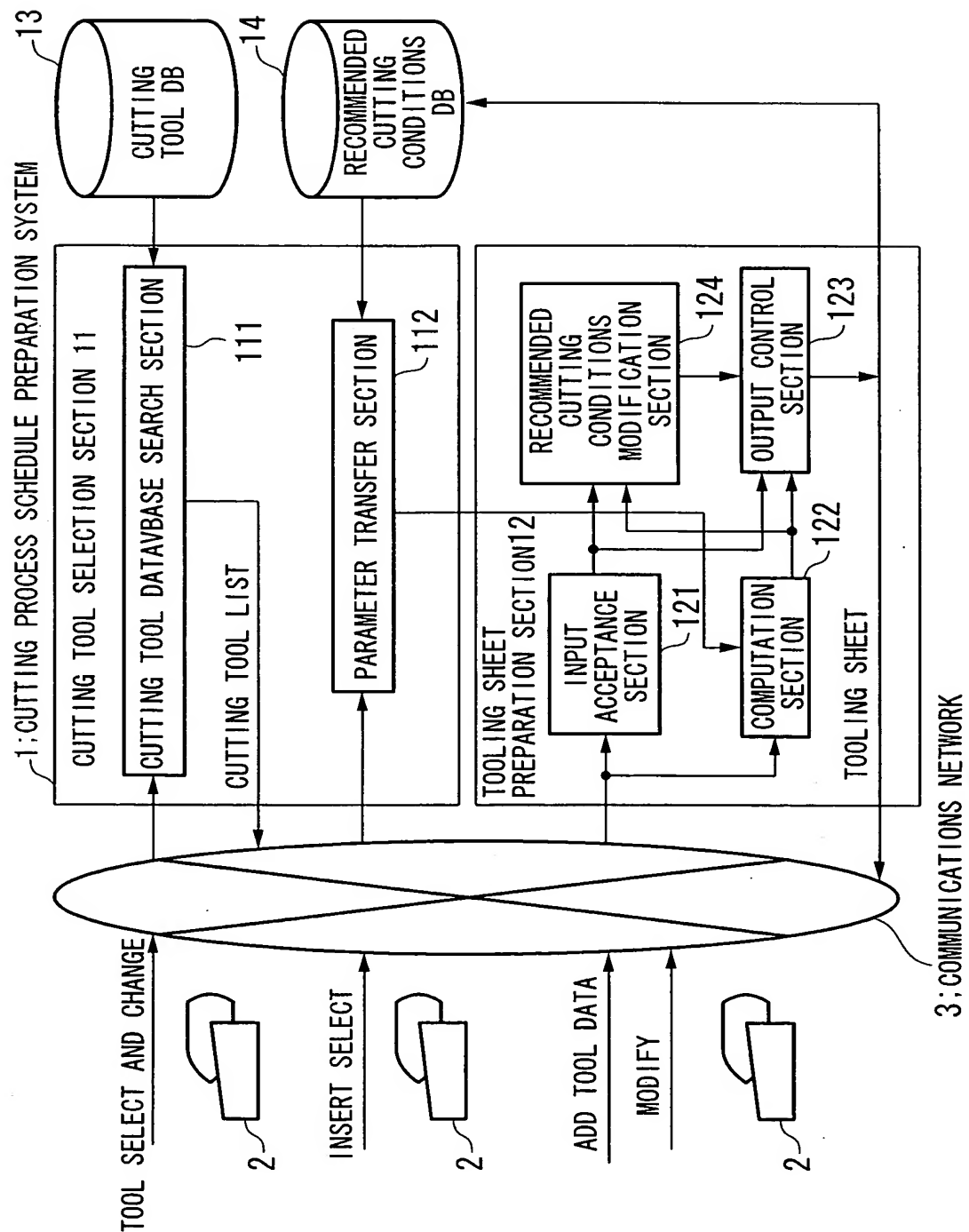


FIG. 2

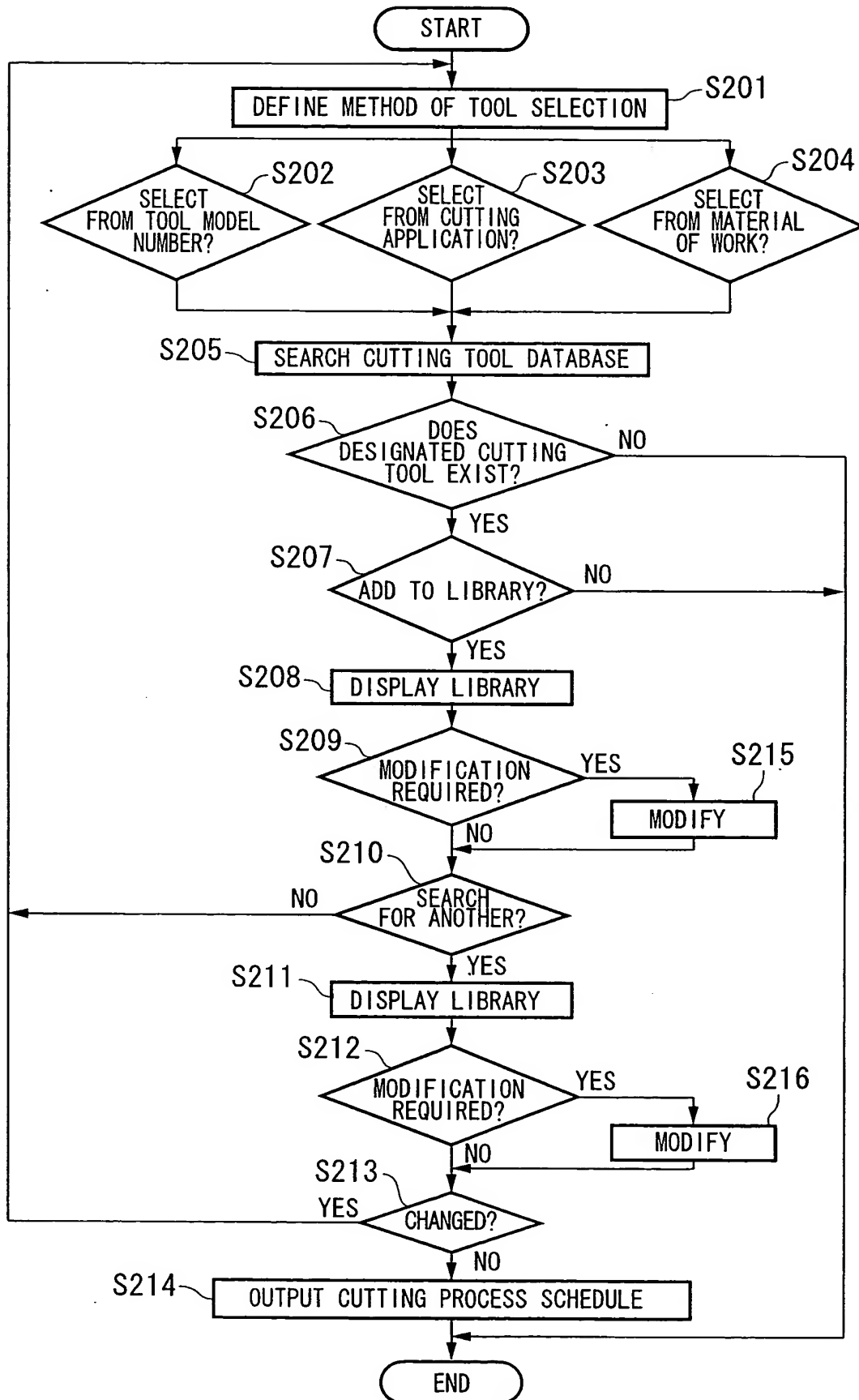


FIG. 3

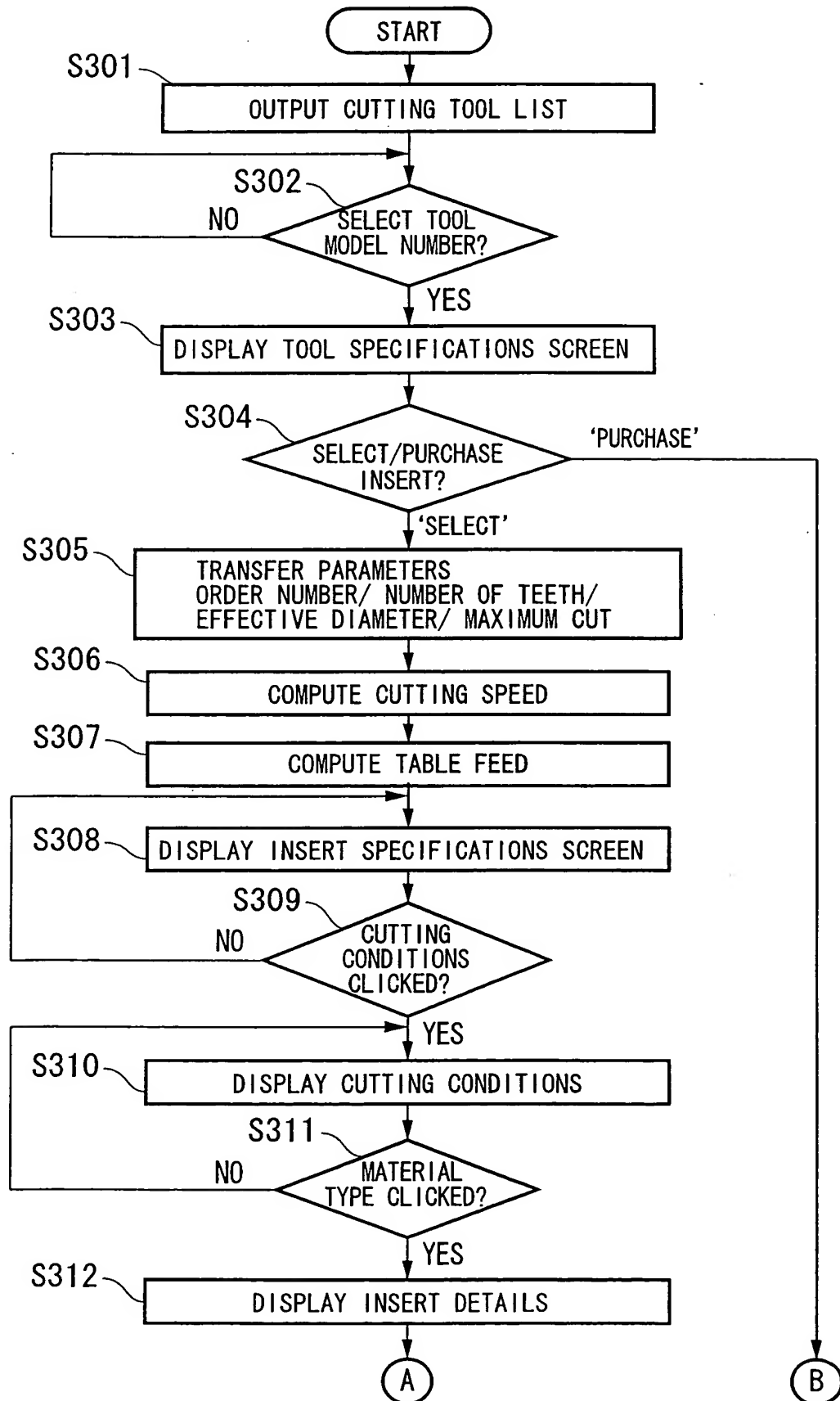


FIG. 4

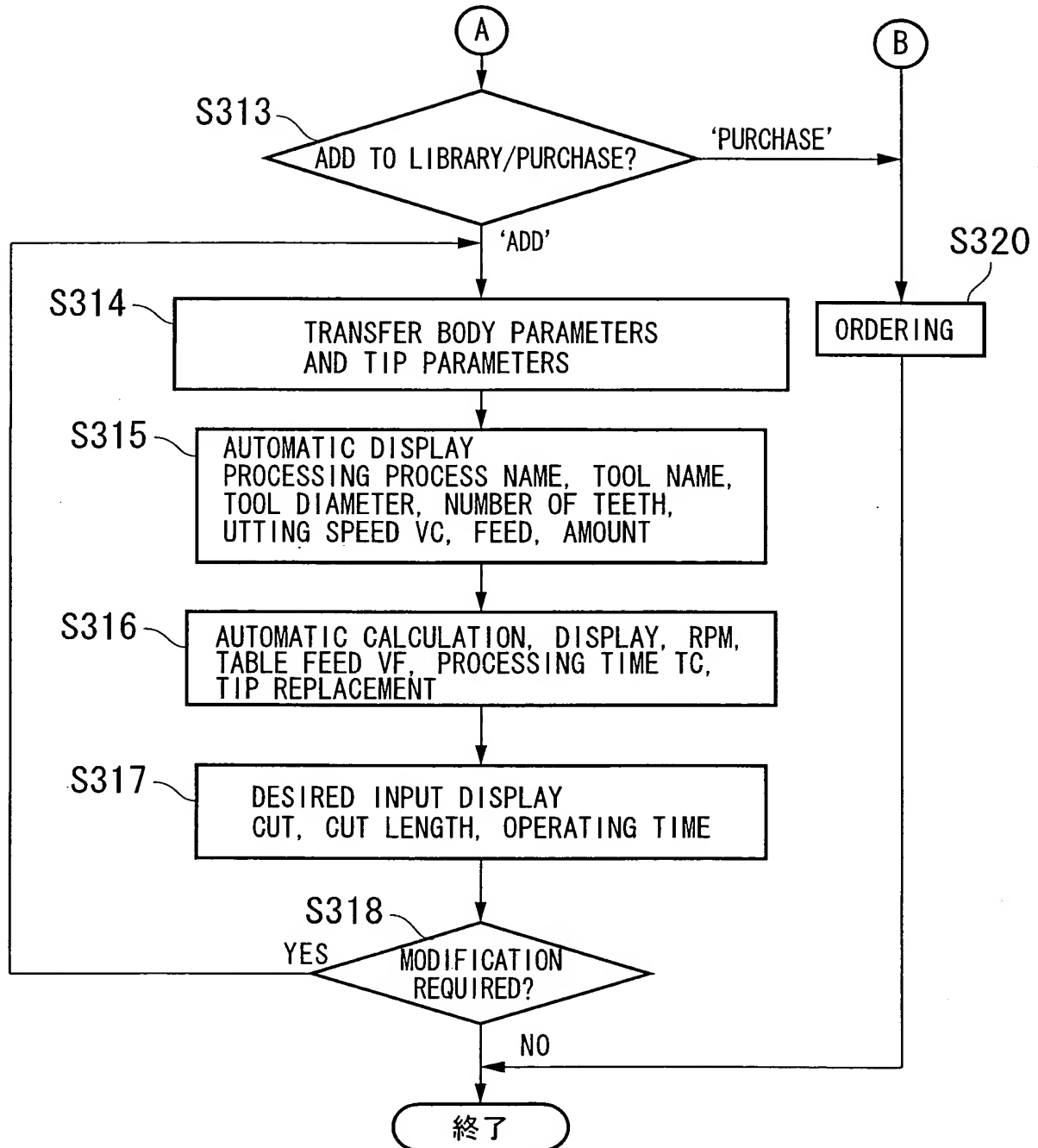


FIG. 5A

EXTERNAL TURNING	▽
EXTERNAL TURNING BORING	
FACE MILLING	
END MILLING DRILLING	

FIG. 5B

	SEARCH
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FIG. 5C

NOT SPECIFIED	▽
NOT SPECIFIED	
FACE MILLING	
SHOULDER MILLING	

FIG. 5D

NOT SPECIFIED	▽
NOT SPECIFIED	
GENERAL CUTTING	
FINISHING HEAVY CUTTING HIGHFEED SPECIAL (DIFFICULT-TO-CUT MATERIALS) GING	

FIG. 5E

NOT SPECIFIED	▽
NOT SPECIFIED MILD STEEL CARBON STEEL, ALLOY STEEL HIGH ALLOY STEEL	
STAINLESS STEEL	
CAST IRON DUCTILE CAST IRON ALUMINUM ALLOY STEEL COPPER, COPPER ALLOYS NON-FERROUS METAL HEAT-RESISTANT ALLOY TITANIUM ALLOY HARDENED STEEL	

FIG. 6A

ASX445/FACE MILLING																		
TYPE	ORDER NUMBER	NUMBER OF STOCK			NUMBER OF TEETH	EFFECTIVE DIAMETE		MAXIMUM DIAMETER	INNER CUTTING EDGE DIAMETER		HEIGHT	MOUNT			KEY WAY		CUTTER WEIGHT (kg)	MAXIMUM DEPTH OF CUT
		L	N	R		D	D1		D1	D2		d	h1	d1	w	t		
COARSE PITCH	ASX445- 050A03R	-	-	●	3	50	63	-	-	-	40	22	20	11	10.4	6.3	0.5	6
FINE PITCH	ASX445- 050A04R	-	-	●	4	50	63	-	-	-	40	22	20	11	10.4	6.3	0.4	6
COARSE PITCH	ASX445- 063A04R	-	-	●	4	63	75.9	-	-	-	40	22	20	11	10.4	6.3	0.7	6

FIG. 6B

BRP /FACE MILLING																	
TYPE	ORDER NUMBER	NUMBER OF STOCK			NUMBER OF TEETH	EFFECTIVE DIAMETE	MAXIMUM DIAMETER	INNER CUTTING EDGE DIAMETER		HEIGHT	MOUNT			KEY WAY		CUTTER	MAXIMUM DEPTH OF CUT
		L	N	R				D	D1		D2	D	h1	d1	w		
CUTTING EDGE R6	BRP6P- 040A03R	-	-	●	3	27.8	40		-	40	16	18	-	8.4	5.6	0.4	JUNE 4TH
CUTTING EDGE R8	BRP8P- 063A04R	-	-	●	4	46.7	63		-	50	22	20	11	10.4	6.3	0.7	MAY 5TH

FIG. 6C

QBF407/QING SYSTEM																	
TYPE	ORDER NUMBER	NUMBER OF STOCK			NUMBER OF TEETH	EFFECTIVE DIAMETE D	MAXIMUM DIAMETER D1	INNER CUTTING EDGE DIAMETER		HEIGHT H	MOUNT			KEY WAY		CUTTER WEIGHT (kg)	MAXIMUM DEPTH OF CUT
		L	N	R				D1	D2		d	h1	d1	w	t		
-	QBF407R 0304Q	-	-	●	4	80	82.8	-	-	50	25.4	26	-	8.8	7	1.2	-
-	QBF407R 0406Q	-	-	●	6	100	102.8	-	-	63	31.75	29	-	8.8	7	2	-
-	QBF407R 0508Q	-	-	●	8	125	127.7	-	-	63	38.1	29	-	12.8	7	2.9	-

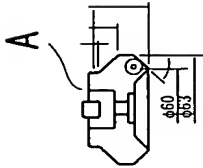


FIG. 6D

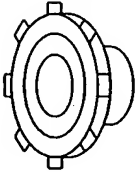
ASX445/FACE MILLING																		
TYPE	ORDER NUMBER	NUMBER OF STOCK			NUMBER OF TEETH	EFFECTIVE DIAMETE		MAXIMUM DIAMETER	INNER CUTTING EDGE DIAMETER		HEIGHT	MOUNT			KEY WAY		CUTTER	MAXIMUM DEPTH OF CUT
		L	N	R		D	D		D1	D2		H	d	h1	d1	w		
COARSE PITCH	SE445R/ L0304C	-	-	●	4	80	102.2	-	-	-	50	25.4	26	13	9.5	6	1.6	5.5
FINE PITCH	SE445R/ L0306C	-	-	●	6	80	102.2	-	-	-	50	25.4	26	13	9.5	6	1.6	5.5

FIG. 7

GENERAL CUTTING
FACE MILLING
ASX445



- PRECISE BUT INEXPENSIVE MOLDED  
TYPE 20° POSITIVE INSERT  
● A WIDE RANGE OF CHIP BREAKERS  
● SCREW-ON TYPE  
● HIGH RIGIDITY DUE TO EMPLOYMENT  
OF A CARBIDE SHIM



INSERT SELECT PURCHASE

TYPE	ORDER NUMBER	NUMBER OF STOCK			NUMBER OF TEETH	EFFECTIVE DIAMETER	MAX. DIAMETER	INNER CUTTING EDGE DIAMETER		HEIGHT	MOUNT				KEY WAY		CUTTER WEIGHT (kg)	MAX. DEPTH OF CUT	DIMENSIONAL DRAWING
		L	N	R				D1	D2		H	d	h1	d1	w	t			
COARSE PITCH	ASX445-050A03R	-	-	●	3	50	63	-	-	40	22	20	11	10	6.3	0.5	6	FIG. 2	

(1) SHIM	(2) SHIM SCREW	(3) CLAMP SCREW	WRENCH (INSERT)	WRENCH (SHIM)
STASX445N	WCS503507H	TPS35	TIP15T	MKY 35R

CUTTING CONDITIONS

FIG. 8

CHIP BREAKER


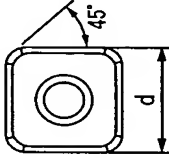
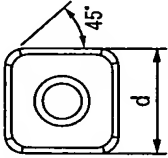

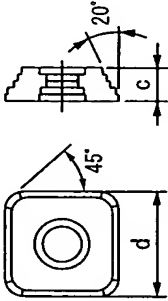
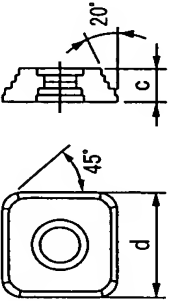

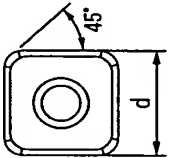
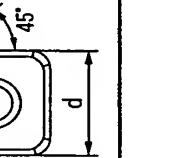

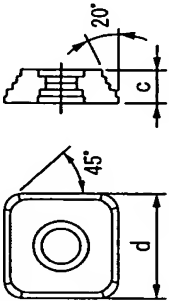
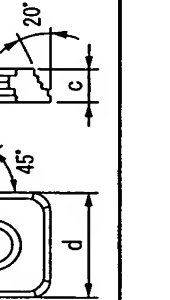
SHAPE	ORDER NUMBER	TOLERANCE	COATED				CERMET CARBIDE		GEOMETRY	DIMENSIONS (mm)			
			F7030	F5010	AP15TF			HT110		INSCRIBED CIRCLE	THICKNESS	WIDTH OF WIPER EDGE	CORNER RADIUS
	SEET13T3AGEN-JL	E	●	●	●			●		13.4	3.97	1.9	1.5
	(4)												
	SEMT13T3AGSN-JM	M	●	●	●			●		13.4	3.97	1.9	1.5
													
	SEMT13T3AGSN-JH	M	●	●						13.4	3.97	1.9	1.5
													
	SEGT13T3AGFR-JP	G						●		13.4	3.97	2.2	—
													

FIG. 9

WORKPIECE	HARDNESS	GRADE	CUTTING SPEED (m/min)
P	MILD STEEL (EG XXXXX)	F7030	200[180~250]
		NX4545	180[130~230]
	CARBON STEEL, ALLOY STEELS (EG XXXXX)	F7030	160[120~200]
		NX4545	150[120~180]
	HARDENED STEEL	F7030	120[100~150]
		NX4545	100[80~120]
M	STAINLESS STEEL (EG XXXXX)	AP15TF	80[80~100]
		F7030	180[130~250]
		NX4545	150[120~180]
K	NICKEL BASE ALLOY (EG XXXXX)	AP15TF	40[20~50]
	CAST IRON (EG XXXXX)	AP151F	180[130~250]
		F5010	200[150~250]
	ALUMINUM ALLOY	HTi10	650[300~1000]

FIG. 10

ORDER NUMBER	GRADE	INSCRIBED CIRCLE	THICKNESS	WIDTH OF WIPER EDGE	CORNER RADIUS	CUTTING SPEED	FEED PER TOOTH	PRICE	ADD TOOL DATA
SEET13T3AGEN-JL	F7030	13.4	3.97	1.9	1.5	160	0.15	1,090 YEN	PURCHASE

FIG. 11

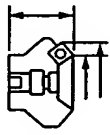

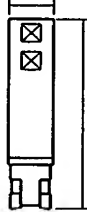



TOOL NO.	MACHINING PROCESS NAME	TOOL NAME	DRAWING	TOOL DIAMETER mm	NUMBER OF TEETH	CUTTING SPEED m/min	FEED m/tooth	REVOLUTION min-1	TABLE FEED mm/min	DEPTH OF CUT (ap) mm	CUTTING LENGTH mm	MACHINING TIME min	OPERATING TIME min	INSERT REPLACEMENT	PRICE
1	FACE MILLING	ASX445-063A04R SEET13T3AGEN-JLF7030		63	4	160	0.15	809	485	1	500	62	3	0	41,160 YEN

FIG. 12

## TOOLING SHEET

WORK	DRAWING NUMBER	DATE OF PREPARATION	PREPARED BY
TEST WORK	YC12345C	2001. 06. 06	OOKI

MACHINING TIME	11 HOURS 19 MINUTES
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TOOL NO.	MACHINING PROCESS NAME	TOOL NAME	DRAWING	TOOL DIAMETER	NUMBER OF TEETH	CUTTING SPEED	FEED	REVOLUTION	TABLE FEED	DEPTH OF CUT (ap)	CUTTING LENGTH	MACHINING TIME	OPERATING TIME	INSERT REPLACEMENT	PRICE
1	FACE MILLING	ASX445-163A04R SEET13T3AGEN-JLF7030		63	4	160	0.15	809	485	1	500	62	3	0	41,160 YEN
3	SLOT MILLING (ROUGHING)	BAP300R254S25 APMT1135PDER-M2F7030		25	4	150	0.15	1,911	1,147	6	120	6	3	0	38,000 YEN
4	COPYING (ROUGHING)	SRM2200SNM SRG20CAP15TF SRG20EAP15TF		20	2	170	0.10	2,707	541	0.5	2,000	222	3	1	42,500 YEN
7	SLOT MILLING (FINISHING)	SZE4200SG		20	4	82	0.10	1,300	510	1	500	59	3	0	31,500 YEN
5	COPYING (FINISHING)	RMH100S12 RMT10AP15TF		10	2	60	0.10	1,911	382	0.4	2,000	315	3	2	30,150 YEN

OBLON, SPIVAK, et al  
Docket No: 247925US2  
Inventor: Masato YAMADA, et al.  
Serial No: 10/760,459  
Reply to NFMP dated: April 28, 2004  
Replacement Sheet